

Chapter 5

Strategic Sourcing Risk Management practices in Indian Automobile Industry: Force Field Analysis of Risk Drivers (Enablers and Barriers)

5.1 Introduction

In this chapter strategic sourcing risk management (SSRM) is analyzed in the context of prevalent practices in Indian Automobile Industry and the risk drivers, i.e. various enablers and barriers of SSRM have been identified, followed by force field analysis thereof. It is a natural follow up post establishment of the Risk Assessment Index developed in the previous chapter. The research framework analyses the risks in the prioritized order and also discusses supply network design factors which have risk implications. This chapter, explains the relevant risk drivers in detail, the research process adopted and various issues, like survey instrument development, modification in survey questionnaire, sampling frame and data collection procedure and research techniques, related to the research design are explained. Responses were collected through structured questionnaire from respondents belonging to senior management cadre including purchase/procurement professionals in the industry. Factor analysis and force field analysis tools have been used for analysis. Through independent exploratory factor analysis (EFA), four SSRM enablers, namely, supplier risk assessment, data sharing in supply network, partnership with supplier, and supply flexibility were identified. Similarly EFA revealed four SSRM barriers, namely, cost focus, ad-hoc or poor planning, data security/ privacy breaches, and hard visualization of SSRM benefits. Through a force field analysis, it was found out that the barriers had a higher impact on the SSRM initiatives than enablers. Strategies to overpower the barriers and strengthen the enablers have been evolved.

Today supply and sourcing activities have become very competitive. Business organizations have invested in state-of-the-art technologies and in attracting top notch talents to boost strategic sourcing and supply chain performance (Park and Kim, 2016). If companies want to become sustainable, then efficiency and speed is not enough. Evidently, great companies get

competitive advantage by being more agile, adaptable and simultaneously aligning interests of partners across supply chain (Lee, 2004). Excessive focus on efficiency and cost can cause supply network to be fragile and excessive leanness can make supply vulnerable (Kleindorfer and Saad, 2005). There is a growing interest in supply management topics within the field of operations management research (Kouvelis et al., 2006). Initiatives like outsourcing, inventories reduction, just-in-time and increasing inter-firm cooperation have potential to reduce sourcing of supplies costs and simultaneously have risk implications (Tang, 2006 and Snyder et al., 2012). Taking the automotive industry as an example, production breakdown in automobile firms can lead to substantial economic losses (Hendricks and Singhal, 2005). Single sourcing (Hendricks and Singhal, 2005; Tomlin, 2006), low inventories (Craighead et al., 2007; Hendricks and Singhal, 2005; Schmitt and Singh, 2009), increased product complexity (Hendricks and Singhal, 2005) and a growing importance of purchasing, as a value creation function (Zsidisin et al., 2000) allows only little margin for errors and leaves many supply networks highly vulnerable. In the past few years, events such as severe acute respiratory syndrome outbreak in 2003, 9/11 terrorist attack in 2001, earthquakes and natural calamities in different parts of the world in recent past have attracted attention of many boards of companies (Yin et al., 2017). Great companies beat rivals by performing during periods of breakdowns and are ahead of competition in meeting customer expectations by matching supply and demand and spotting trends in consumers' behaviour. Importance and awareness of strategic sourcing risk management (SSRM) is increasing (Juttner, 2003). Supply risk management is a process of understanding risks and minimizing their likelihood and their negative consequences across the supply network (Norrman and Jansson, 2004). The industry needs to examine the interplay and maintain balance between enablers and barriers to work out a strategy to mitigate the risks at all levels of organizational hierarchy and identify/address implementation challenges. Thus, the research question guiding the current study is to identify the underlying factor structure of enablers and barriers of risk management in the strategic sourcing in the Indian automotive industry. This research paper has attempted identification and prioritization of the enablers and barriers for SSRM professionals of Indian automobile sector.

Companies consider sourcing decisions as complex and companies tend to have a lack of models supporting the decision process. Despite the advantages of sourcing, companies do not have understanding of potential risks in outsourcing/off shoring decisions. Therefore, it is vitally important to minimize rate of disruptions and improve recovery time from disruptions. Supply risk management and alignment with the supplier increase complexity. If companies spend 50 per cent of their revenue, they are highly exposed and depend on their supply base. The managers face considerable uncertainty and ambiguity that stems from ever-changing proprietary technologies and other factors. A failure may affect a company in several ways, such as financial, market-share, shareholder value, customer, competitors, reputation, legal or brand perspectives. Pandey and Sharma (2017) analysed various risks which may disrupt the automotive supply chain. Risk management through strategic sourcing seeks to address all three dimensions of the risk construct, (the likelihood of occurrence of a particular event or outcome, the consequences of the particular event or outcome occurring and the causal pathway leading to the event) by analysing the sources, seeking to understand the forces, that may drive a particular sequence of events and how these might be managed to improve the chances of positive outcomes in terms of performance and, by corollary avoid negative consequences. No company wants disruptions in their supply chain operations. The companies' utmost priority is business continuity and customer satisfaction (Wei et al., 2018).

5.2 Potential Enablers in Strategic Sourcing Risk Management Implementation

Potential enablers or positive forces for SSRM implementation can be classified into four categories, namely, supplier risk assessment enablers, data sharing in supply network enablers, partnership with supplier enablers and supply flexibility enablers (Ho, 2015; Yin et al., 2017).

5.2.1 Supplier Risk Assessment (SRAE)

An advance warning or forecast of a catastrophe can provide a company with valuable preparation time to align its capabilities to minimize disruption effects. Prior information may allow complete prevention of a disruption. The goal of an early identification of potential

catastrophes requires foresight on the working environment, i.e. suppliers, markets, inventories, competitors, laws and transportation (Talluri et al., 2006). It also requires constant monitoring of the geographical environment. Foresight can provide strategic advantages. In 2000, Philips a chip manufacturer suffered a fire at its Mexico plant. Both, Nokia and Ericsson, relied on Philips as the only supplier for their cell phone chips. Nokia, anticipated the potential disruption, responded fast to contact Philips to use its alternate facilities to meet Nokia's demand and by watching their supplier processes, Nokia increased its market share by 4 percent, and on the other side, Ericsson was late. All available capacity of Philips was taken by Nokia. Consequently, Ericsson reported a loss of \$1.8m from the shortage of chips (Norrman and Jansson, 2004). The second issue is predictive analysis (Jahangiri et al., 2017). Understanding the supply risk has become a priority and tools are needed to predict the supply network risks (Ruiz-Torres et al., 2013). There is a need for intelligent search agents and dynamic risk indices at every node of the supply network (Menczer, 2003).

5.2.2 Data Sharing in Supply Network (DSE)

Data sharing plays a vital role in supply networks. If supply networks have clear picture of disruptions that occurred in one part of the supply chain, other companies can respond effectively. Immediate information enables partners to take appropriate actions like re-routing, changing production plans, re-deploying production resources or adjusting capacities. Data sharing requires two things, first, event driven data of supply chain operations, and second tight integration of information systems across suppliers, manufacturers, logistics service providers and customers. Cisco's e-hub, a private exchange, meets these two requirements. It links multiple tiers of suppliers and instantly provides all players a complete picture of supply disruptions and shortages (Lee and Wolfe, 2003). Information asymmetry occurs in supply networks, when one member has more access to information sources compared to other players (Lee and Whang, 2000). The member, who has more access to information, can take undue advantage, which reduces profits and increases supply vulnerability. For example, manufacturer has a superior knowledge about its manufacturing process and product quality and retailer has more knowledge about customers and product demand (Fan et al., 2017). Information asymmetry does not resolve the conflicting

decision criterion in terms of decisions related to inventory, transportation, lead time, capacity and quality (Simichi et al., 2006). Managers can rate information asymmetry on the basis of information visibility both in upstream and in downstream and how quickly and frequently supply chain members share information with each other. In disruption discovery, visibility across the supply network has become the new battle ground for sourcing competitiveness (Blackhurst, 2005). Visibility is real time data/ information sharing with every node in the supply network. Sometimes, data sharing and visibility are used interchangeably; here data sharing is an activity and visibility is outcome of that activity (Swaminathan and Tayur, 2003; Lee et al., 2013).

5.2.3 Partnership with Suppliers (PSE)

Moorman et al. (1992) define commitment to a relationship as an enduring desire to maintain a valued relationship. In a review of relationship commitment in industrial relationships, Morgan and Hunt (1994) concluded that commitment was the key component to successful relationships. The other important antecedent for supply risk management is aligning the resources and interests of all supply network partners. Here, alignment means aligning the supply network partner's interests to reduce the supply disruptions and increase the supply network performance. Data/ information sharing is recognized as a key requirement for SSRM (Faisal and Shankar, 2006). Several studies suggest that successful buyer-supplier relationships are associated with high levels of information sharing. Recognizing the importance of communication in inter-organizational relationships and increased levels of communication have been found to be associated with commitment (Morgan and Hunt, 1994). According to Mentzer et al. (2001), a key component of supply management is sharing risk and reward among members of the supply network. Chen et al. (2013) have emphasized the importance of risk sharing for collaborative relationships.

5.2.4 Supply Flexibility (SFE)

Helferich and Cook (2002) provide a detailed guideline for a disaster management process. Risk is restrained by developing a contingency plan for implementation, if risk materializes. A contingency plan is an alternative plan that will be used if possible foreseen risk events becomes a

reality. Like all plans, contingency plan answers all other questions of what, when, where and how much actions take place. Contingency plan serve as a user's manual in case of disruption (Golini and Kalchschmidt, 2015). Important tasks, at the recovery stage, include assessment of undamaged resources, identification of the human resources and physical infrastructure needed. Cooperation with law enforcement and government efforts is essential. In certain disasters, it is possible to get state or central help, which can be crucial in recovery. Supply flexibility and contingency planning have shown to have a positive impact on a firm's ability to respond to unforeseen disruptions in a manner that minimizes overall risk exposure (Fawcett et al., 1996 and Yin et al., 2017).

Pre-assigned roles and responsibilities can help in maintaining control and preventing chaos. Resources of the firm, across the supply chain, need to be correctly aligned and deployed with disaster and recovery planning. Right deployment of resources across the chain becomes an aid in enhancing driving capabilities with matched organizational processes (Day, 1994). Physical, technological, informational resources must be collected, cleared, moved, opened and governed. Intranet and extranets, electronic data interchange, video conferencing, global positioning system and even private radio all provide assistance while likely creating a network of immense confusion (Richey, 2010 and Kim and Chai, 2017).

5.3 Potential Barriers in Strategic Sourcing Risk Management Implementation

Barriers or resisting forces for SSRM implementation can be classified into four categories, namely, cost focus, adhoc or poor planning, data security/ privy breaches and hard visualization of SSRM benefits (Ho, 2015).

5.3.1 Cost Focus (CFB)

Once the contract is signed, purchaser's job is not over. In fact, it is just the beginning. One of the most important roles assumed by sourcing department is cost management, which is understanding the true underlying cost of what is purchased. This involves a process of unbundling the price paid and other components of price over the life cycle of a product or service, to deliver a

target cost and a unit rate to determine whether it is priced competitively in the market place. Cost management may involve different decision-support tools and database to create insights into the following:

- The cost of supporting a process or commodity;
- The gap between cost drivers and the assumed business case;
- Identifying the business case (e.g. is it a reasonable expense after we deliver it to the customer?);
- The total cost of offering a service, including all elements of receiving, use and disposal over the life cycle of the offering;

However, cost focus leads to conflicts among other parameters instead of improving their overall performance metrics and the whole supply network performance metrics (Ho, 2015). Performance metrics form the basis of integrated work management systems. One of the barriers for supply network alignment is lack of appropriate performance metrics (Fawcett and Magnan, 2001).

5.3.2 Adhoc or Poor Planning (PPB)

Being a complex matrix of numerous inter-dependent operations juxtaposed into each other, ad hoc or poor planning constitutes a major barrier for strategic sourcing. Pre-assigned roles and responsibilities can help in maintaining control and preventing chaos. Resources of the firm, across the supply network, need to be correctly aligned and deployed with disaster and recovery planning. Right deployment of resources across the chain becomes an aid in enhancing driving capabilities with matched organizational processes (Day, 1994). Physical, technological and informational resources must be collected, cleared, moved, opened and governed. Intranet and extranets, electronic data interchange, video conferencing, global positioning system and even private radio all provide assistance while likely creating a network of immense confusion (Richey, 2010; Arena et al., 2017).

5.3.3 Data Security/ Privy Breaches (PPB)

Inadequate information sharing or even data security breaches may result in behaviours that causes breakdown in collaboration efforts. Risk and reward sharing are important for a long-term focus and collaboration among the source partners. Information systems and technologies have the potential to coordinate and integrate the activities across the supply process along with the associated risks of the data breaches, un-intentional or otherwise (Tupa et al., 2017). Internet enables companies to get real time data, which improves the performance of the entire supply operations. It has been demonstrated that the internet can have an important impact on the management of the strategic sourcing risks, and it can improve the competitiveness of firms. With the development of Web technologies, source risk management will focus on helping decision makers in better managing source partner relationships, efficiently integrate internal processes and collaborate in real time with trading partners. The level of collaborative risk management depends on partner's technological capability (Kwan, 1999). Information technology infrastructure implementation and data security has become the major concern for supply process managers.

5.3.4 Hard Visualization of Strategic Sourcing Risk Management Benefits (VB)

In many organizations, sourcing personnel are not viewed as being “strategic”, often because procurement is just another functional silo. People may not be positional to think about total owning costs, profitable growth and the procurement pathways (Wiengarten et al., 2016). In addition, procurement may be positioned too low in the organization to have strategic clout and influence. Leaders in strategic sourcing carefully examine where to organizationally position their sourcing resources within the company. In practice, we see leading edge companies either integrate procurement into broader process-oriented organizations (e.g. product supply, sourcing) or place procurement on par with their powerful functional counterparts such as manufacturing, marketing and operations (Mohammed and Knapkova, 2016).

Additionally, many companies initially find they may not have the skill base or training to properly align with the requirement of the corporate purchasing portfolio. The skill required within the organization increase as the complexity and risk of the purchase category rise within the context of the segmented buy. These skills do not necessarily have to come from the purchasing

function alone. The cross-functional teams approach coupled with selective up gradation of skills has enabled a number of major corporations to largely exploit their strategic sourcing opportunities within a two to three year time frame. The overall contribution of strategic sourcing is often not visualized in totality in view of the lack of quantified metrics as well as non-identification of intangible advantages accrued by adopting SSRM (Kim and Chai, 2017).

5.4 Research Methodology

5.4.1 Data Collection

Data were collected through an administered survey in India to all 1,046 automotive companies, taken from CII Industry directory. This directory consisted of e-mail id of important persons in automotive company. Two key appointments were selected for this study, VP or GM in the areas of purchase/production/ logistics or supply chain and CEO of the company. The questionnaire was forwarded to three categories of executives, namely, purchase managers, logistics managers or sourcing or procurement managers (if any). Mailing and three follow-ups generated 79 usable responses (after cancelling multiple responses from same company). The data were screened for univariate outliers. The minimum amount of data for exploratory factor analysis (EFA) was satisfied, with a final sample size of 79, providing a ratio of approximately 10 cases per variable. The response rate of 7.56 per cent was fairly good enough for online questionnaire. The questionnaire was mailed to complete target population that is 1,046 companies. The 79 respondents were having the considerable number of years of experience in the industry. Statistically, the response seems to be low but in terms of quality of information that was gathered was good enough. In operations management area, this kind of response is good, considering the experience of the people in the industry. In literature, there are studies (Aitken et al., 2005; Lavastre et al., 2012), who reported less than 10 per cent response rates. The responses received covered 55 auto components suppliers and 24 original equipment manufacturers. The details of surveyed companies and respondents are shown in Figures 5.1 to 5.3 (Table 5.1).

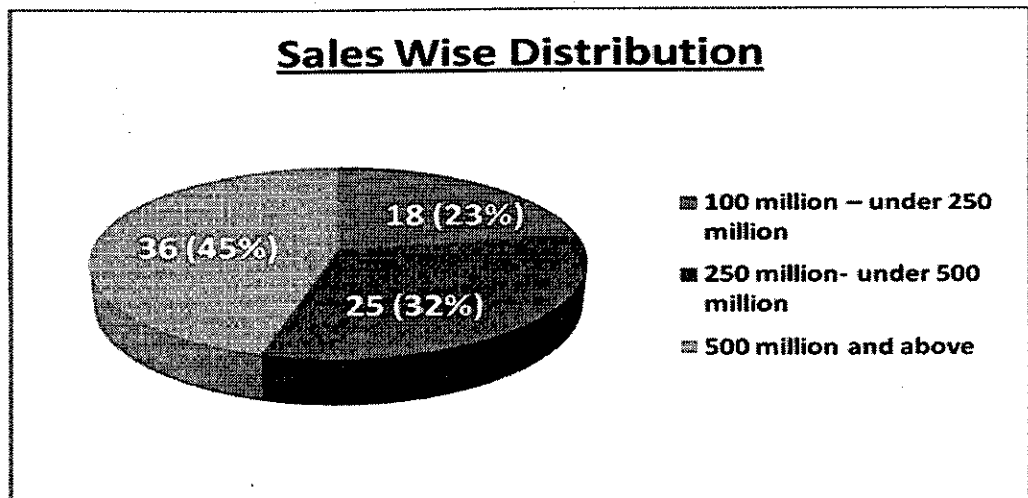


Fig. 5.1: Sales Wise Distribution of Companies
 Source: Singh et al. (2018)

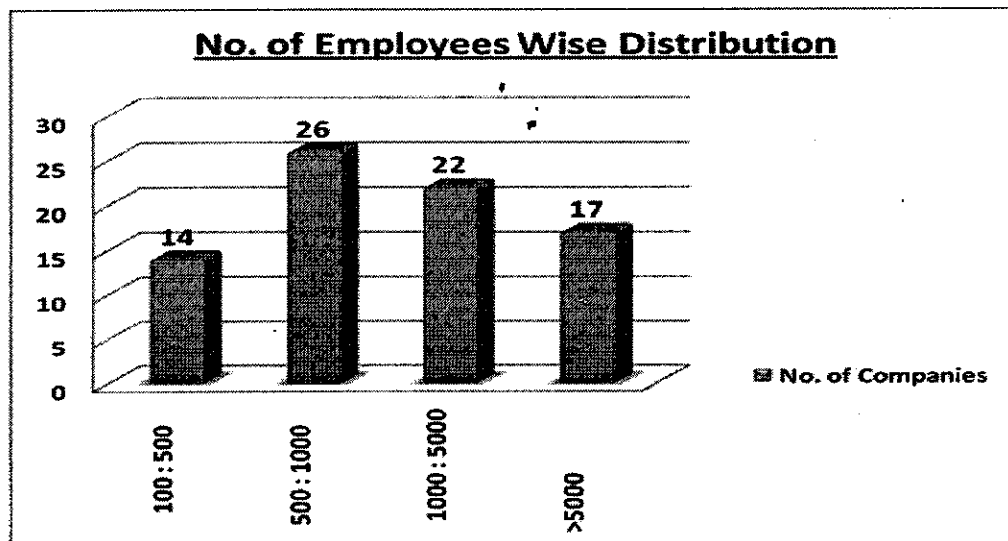


Fig. 5.2: Number of Employees Wise Distribution of Companies
 Source: Singh et al. (2018)

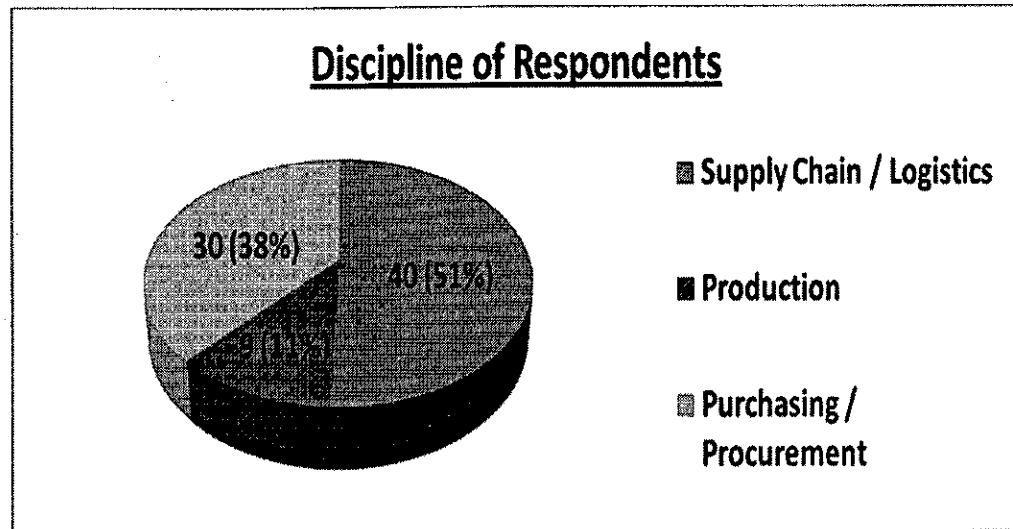


Fig. 5.3: Discipline of Respondents
Source: Singh et al. (2018)

Table 5.1: Demographic Details of Surveyed Companies

Sales	No. of Companies	Percentage
100 million – under 250 million	18	22.78
250 million- under 500 million	25	31.64
500 million and above	36	45.56
No. of Employees		
100- Under 500	14	17.72
500- Under 1000	26	32.91
1000- Under 5000	22	27.84
5000 above	17	21.51
Discipline of Respondents		
Supply chain / logistics	40	50.63
Production	09	11.39
Purchasing / procurement	30	37.97

5.4.2 Questionnaire and Measure Development

We used a multi-step process to initially develop and validate our instrument (As per Churchill, 1979). Initially, we conducted an extensive review of the operations management, risk

management and strategic sourcing literature to identify relevant constructs, operational definition and associated items to measure construct. In this study, we used new measures, but, whenever possible, we adopted existing scales to measure constructs. For establishing content validity of the survey questionnaire, we first did pilot study of ten practitioners and ten academicians related to supply network management. A preliminary questionnaire was designed and relevance of constructs and their measures, their wordings, directions and format of questionnaire were refined on the basis of comments of practitioners and academicians. Finally pre-tested questionnaire was administered to the Indian automobile industry. Seven-point Likert scales were used to operationalize all constructs. Tables II and III depict the scale developed for the purpose of the study.

5.5 Data Analysis

EFA using varimax rotation method was used for analysis of the received responses using the SPSS version 19 software. Initially, the factorability of items was examined. Several well-recognized criteria for the factorability of a correlation were used. First, it was observed that eight items (four each in respect of enablers and barriers) correlated at least 0.3 with at least one other item, suggesting reasonable factorability. Second, the Kaiser - Meyer- Olkin (KMO) measure of sampling adequacy was 0.83 and 0.72, respectively, i.e. $(X^2(79) =, p < 0.05)$ above the commonly recommended value of 0.6 and Bartlett's test of sphericity was significant. Third, the diagonals of the anti-image correlation matrix were also all over 0.5. The commonalities were all above 0.3, further confirming that each item shared some common variance with other items. Given these overall indicators, factor analysis was deemed to be suitable with all eight items. The analysis extracted four factors each in respect of enablers and barriers. The four-factor solution in respect of enablers and barriers, explained 67.7 and 69.2 per cent of the variance, respectively, and was therefore preferred because of its previous theoretical support. All the four factors (SSRM enablers) with their loadings, descriptive statistics and Cronbach's alpha values have been shown in Table IV.

Table 5.2: Scale development for SSRM Enablers

SSRM Enablers	Measured Variables	References
Supplier Risk Assessment (SRA)	Predictive analysis tools for SSRM	Menczer, 2003; Jahangiri et al., 2017
	Risk reporting and governance procedures in place	Richey, 2010
	Dissemination of risk management practices through manuals	Richey, 2010; Ruiz-Torres et al., 2013
Data Sharing in supply network (DS)	Inventory levels are visible throughout supply network	Lee and Whang, 2000; Fan et al., 2017
	Transportation visibility	Blackhurst, 2005
	Demand information is visible throughout supply network	Swaminathan and Tayur, 2003; Lee et al., 2013
Partnership with Suppliers (PS)	Key performance indicators are aligned	Kampstra, Ashayeri and Gattorna, 2006
	Partners priority on cost and delivery matches	Olvera, 2008
	Supplier ordering processes matches with us	Olvera, 2008
	Risks and rewards are shared	Narayana and Raman, 2004; Chen et al., 2013
Supply Flexibility (SF)	Command group to analyze end to end operations	Fawcett et al., 1996; Yin et al., 2017
	Maintain organization's emergency plans	Helferich and Cook, 2002; Golini et al., 2015
	Defined contingency plan responsibilities	Helferich and Cook, 2002
	Post event analysis and lessons learned	Fawcett et al., 2001

Table 5.3: Scale development for SSRM Barriers

SSRM Barriers	Measured Variables	References
Cost Focus	Cost containment is top priority	Fisher, 1997; Ho, 2015
	Lack of forecasting tools	Kwan, 1999
	Fear of squeezing profit margins	Narayana and Raman, 2004
	Unwillingness to share risk related information	Sahay and Maini, 2002
Adhoc or Poor Planning	Lack of top management support	Morgan and Hunt, 1994
	Non alignment of strategies with operations	Lambert et al., 1998; Arena et al., 2017
	Individual are too busy	Juttner, 2003
Data Security/Privy Breaches	Inflexible organization systems and processes	Simichi et al., 2006; Melao and Pidd, 2000
	Use of legacy software	Kwan, 1999
	Cyber Security breaches	Hung et al., 2011; Tupa et al., 2017
	Lack of trust among supply chain members	Agarwal and Shankar, 2003
Hard Visualization of SSRM Benefits	Organizational silos	Christopher and Peck, 2004; Wiengarten et al., 2016
	Non alignment of performance measures to rewards	Simatupang and Sridharan, 2005; Fawcett and Magnan, 2002
	Technology do not support business processes	Kwan, 1999; Mohammed and Knapkova, 2016
	Lack of enhanced analytical capabilities	Menczer, 2003

5.5.1 Factor Analysis on Strategic Sourcing Risk Management Enablers and Barriers

From factor analysis using EFA, we extracted four SSRM enabling factors. Factors named as ‘Supplier Risk Assessment’, ‘Data Sharing in supply network’, ‘Partnership with Suppliers’ and ‘Supply Flexibility’. Supplier risk assessment factor loadings, except on one item, namely ‘Using risk indices to monitor risk (SRA2)’, are more than 0.6. Data sharing in supply network factor loading are greater than 0.75 and Cronbach’s alpha is slightly less than 0.7, which satisfies threshold criteria of reliability and validity. Variables of ‘Supply flexibility’, SF7, ‘Adhoc or Poor Planning’, PP1, and ‘Hard Visualization of SSRM Benefits’, V4 are deleted. Partnership with suppliers variables except PS8 and PS9 (suppliers keep inventories and risk reward are shared) loading are greater than 0.579. Variables PS8 and PS9 were deleted from Partnership with suppliers factor. For modelling purposes, survey respondents reported rating on different items of constructs defined in Table IV. EFA (principle component analysis) using Varimax rotation method was used, and this analysis extracted four factors (SCRM Barriers). All the factors with their reliability and factor loadings have been shown in Tables 5.4 and 5.5.

Measured variables have been loaded with their respective factors. Tables 5.4 and 5.5 incorporate the Cronbach’s alpha measure reported in this study and factor loadings of each measure of the constructs. Most of the items used in this study for multi-items constructs showed a reliability of 0.7 or higher, and 0.6 for new scales which is indicative of good reliability (Nunnally, 1978). Acceptable loading factor of 0.50 or greater is obtained for all items of four constructs.

Table 5.4: Factor loading and Cronbach’s Alpha for SSRM Enablers

Construct	Item Name	Reliability	Factor Loading	Item Deleted
Supplier Risk Assessment (SRA)	SRA1- Having predictive analysis tools for SSRM	0.865	0.743	
	SRA2-Use risk indices to monitor risks continuously		0.574	Yes
	SRA3-Having risk reporting and governance process		0.774	
	SRA4-Dissemination of RM practices through manuals		0.768	

Construct	Item Name	Reliability	Factor Loading	Item Deleted
Data Sharing in supply network (DS)	DS1-Inventory levels are visible throughout supply network	0.696	0.758	
	DS2-Demand levels are visible throughout supply network		0.764	
	DS3-Transportation visibility		0.761	
Partnership with Suppliers (PS)	PS1-Command group to analyze end to end supply network operations	0.737	0.644	
	PS2-Maintain organization's emergency plans		0.857	
	PS3-Keep control of organizational at all times		0.819	
	PS4-Defined contingency responsibilities		0.812	
Supply Flexibility (SF)	SF1-Defined meeting to share KPI	0.846	0.710	
	SF2-Customers priority on cost matches suppliers priority on cost		0.619	
	SF3- Customers priority on delivery matches suppliers priority on delivery		0.628	
	SF4-Defined communication network protocol		0.688	
	SF5-Suppliers ordering processes matches with yours		0.663	
	SF6- Cost pressure is borne by suppliers only		0.646	
	SF7- We educate our suppliers on supply network risks		0.579	Yes

KMO value = 0.831 Variance explained = 67.67%

Table 5.5: Factor Loading and Cronbach's Alpha for SSRM Barriers

Construct	Item name	Reliability	Factor Loading
Cost Focus (CF)	(CF3) Cost containment is top priority	0.865	0.934
	(CF4)Lack of forecasting tools		0.913
	(CF1)Fear of Squeezing Profit Margins		0.677
	(CF2)Unwillingness to share risk related information		0.675
Adhoc or Poor Planning (PP)	(PP3) Individual are too busy	0.696	0.854
	(PP2)Non alignment of strategies with operations		0.728
	(PP1)Lack of top management support		0.570

Construct	Item name	Reliability	Factor Loading
Data Security/ Privy Breaches (PB)	(PB1)Use of legacy software	0.737	0.801
	(PB2)Cyber Security breaches		0.739
	(PB3)Lack of trust among supply chain members		0.697
Hard Visualization of SSRM Benefits (V)	(V2)Organizational silos	0.634	0.669
	(V1)Non alignment of performance measures to rewards		0.630
	(V4)Lack of enhanced analytical capabilities		0.587

KMO value= 0.720 Variance explained = 69.18%

5.5.2 Results of Force Field Analysis

Force field analysis was conducted taking the mean scores of the eight factors (four enablers and four barriers) as identified by the EFA. The mean scores have been arrived at by employing the mean response of each component and the factor loading thereof with respect to each factor. The diagrammatic representation of the force field is depicted in Figure 4. The results show that out of the four driving forces supplier risk assessment (SRAE), supply flexibility (SFE) and partnership with suppliers (PSE) were the most significant enablers. The total score for the enabling factors was 10.32. On the other hand, the three most significant restraining forces were poor planning (PPB), hard visualization (VB) and data security/ privy breaches (PBB) barriers. The total score for the restraining forces were 16.63. Hence, it is evident from the analysis that there is a significant difference in scores (6.31) between the opposing forces, which is ultimately holding back the firms under study in improving their supply network efficiency.

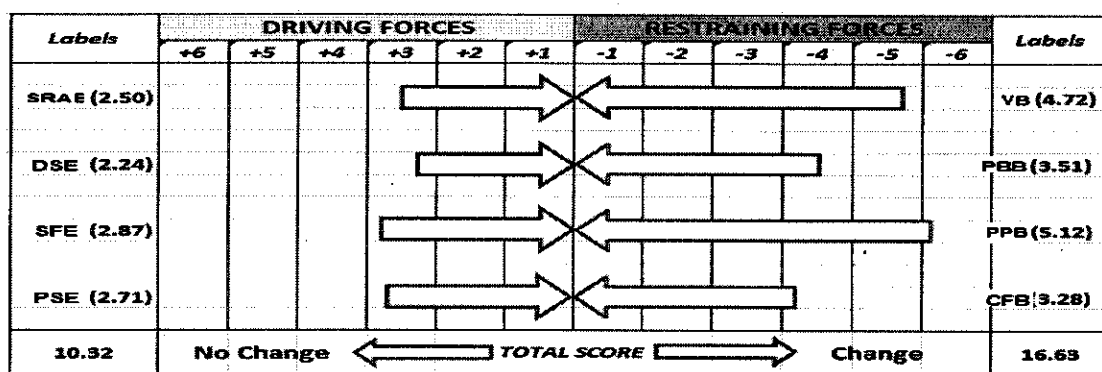


Fig. 5.4: Force Field Analysis of SCRM Enablers and SCRM Barriers
Source: Singh et al. (2018)

5.6 Discussion on Findings

To improve the efficiency and effectiveness of the supply chain, the automobile firms should be looking to strengthen information sharing among the partners. The results suggest weak information visibility in the automobile supply chain. The partners are not having a clear picture of the inventory levels with upstream and downstream members in the supply chain. This leads to unnecessary inventory buildup or sudden stock out situation which may breakdown the flow of the goods in the whole network. Moreover, inventory buildup also leads to blockage of scarce working capital for small firms and increase in inventory holding cost, without any substantial value addition to the stock. In rare cases, it may also lead to pilferage and obsolescence, which is highly undesirable. The study suggests that there is lack of clarity in the movement (shipment) of goods as well. The immediate members are not aware of the details of goods shipment within the various partners which has a direct impact on their own inventory as well as on production planning, and at the end may create dissatisfaction to the final customer. Hence, the partners in the supply chain should be developing a right kind of platform for sharing of information, related to inventory and its movement to all concerned in the chain. A common information systems policy might be developed to track flow of goods in the supply chain with help of appropriate technology, both hardware and software.

On the supplier risk assessment front, the automobile firms needs to continuously monitor the risky events. Strategic sourcing and corrective actions well in advance for mitigating losses will be a game changer for risk mitigation in the supply chain. The results suggest that the firms are not having strong supply network risk management tools in their portfolio which can be a huge drawback during time of uncertainty. Risky events can happen both within the organization and can be felt from external sources as well. As there are multiple firms engaged in a supply network and in varied business activities, there are multiple avenues for risk pilfering into the system. Hence, proper profiling of internal and external risks of the individual members in the chain, along with a focus on mitigating measures is need of the hour, which can be achieved through a system of continuous monitoring at a central level.

The results of the study indicate that there are some weak points in aligning the supply chain network. There are mismatches in terms of cost and delivery time between the supply network partners. The automobile companies are not able to share information on a real-time basis about their production plan which has led to vendors not able to supply components and sub-

assemblies on time to the assembly line. To cater to this problem, automobile firms have buildup production inventory in their facilities which has eventually led to inefficiency. Due to constant pressure from the market forces, many auto firms are forced to curtail production cost. They have in turn passed on the burden of reduced cost to Tier 1 vendors and beyond. The vendors who are not having so much focus on innovation are not able to contain cost and are finding themselves at the receiving end. This has led to frustration among the vendors and suppliers. There is a need for jointly managing the cost issues, through concerted innovation initiatives, by auto firms and their vendors. Moreover, there has to be a whole-hearted initiative by the auto companies to educate and support the vendors with tools and techniques for innovation, cost containment and improving supply network cooperation.

On the data sharing front, it is evident from the results that the supply network members are working in close silos. There is hardly exchange of relevant information aimed at improving efficiency of the line or assisting the partners in case of need/ emergency. The members are mainly concentrated in doing their job well and least care about the smooth function of the supply chain system. This mentality has made its way into the firms as their performance is not linked with the performance of the whole network. The firm provides them their due once they deliver on their individual performance parameters. They lack a holistic approach in viewing the supply network as a means to cater to the needs of the end consumers. This very important focus of the system is lost when firms look at enhancing their productivity and contributing to enhance those efficiency parameters. Hence, their narrow and myopic mindset defeats the whole concept of a smoothly run supply chain network, and there has to be a constant information exchange between the members of the supply network.

Results suggest that firms in the Indian automobile sector are not having well-designed sourcing strategy in place to cater for supply flexibility. Most of the activities of the supply networks work on a transaction basis. This has led to non-alignment of activities between the members of the supply network in the long run. Second, there is a lack of commitment and coordination from the top management of the firms under investigation to have a systematized supply chain in place. Many of the firms in the whole system are working on legacy business processes and systems. They neither have motivation nor resources for business process change and up-gradation. This has increased the inefficiency and rigidity in the network. For some of the firms, the business processes are more updated, flexible and sophisticated than others. Thus, the firms which have superior flexible processes are not able to contribute to their performance as well as to whole network because of the drag from the legacy business processes followed by others.

Until and unless, there is alignment between the business systems followed by all the firms in the network, a smoothly run supply chain will be a distant dream. A joint strategic decision between the leaders of the firms for aligning sourcing activities and improving its efficiency will lead to better performance of the firms, while increasing the satisfaction level of the end customers.

The biggest drawback for Indian automotive sectors is in terms of partnership with suppliers or inter-firm collaboration. Collaboration efforts have to be undertaken between the members of the supply network of automobile firms for ultimate benefit of all the partners. Some of the bigger players in the network may need to emerge as champions and change masters in this process. They need to initiate the change process through convincing and motivating the smaller and uninterested players to adopt better techniques for an efficient supply network. Researchers in their field have emphasized time and again that trust is the key for a well-run supply network. Players with common interest may form a platform for increasing trusting relationship between the partners. This emphasis on trust would help the members of the network to share information which affect the business with a focus on other key stakeholders, such as customers and government. This sharing of information about business activities will be key driver for a smooth supply network. Sharing of information along with increase in trust will help the members come out of their organization silos and improve in collaborate efforts. Partnership efforts will help the small players in the industry to upgrade their business process from inflexible and legacy systems to more flexible systems with real time data and information sharing in focus. With investment in intelligent forecasting tools and enhancing analytical capability, at a central level and also within, each firm will help mitigate risk in the supply network.

Ad hoc or poor planning has emerged as one of the three major restraining factors of strategic sourcing in the automobile industry. Needless to say, for any operation in a supply network to effectively contribute requires a detailed and deliberate planning. Evidently, this planning has to be driven by numerous inputs from each of the various stakeholders in the supply chain. First and foremost of course is to identify and recognize sourcing as a “strategic” component. The onus of this recognition should squarely lie with the top management and functionaries in the organization. Apparently, the results of the Field Force analysis depict that the management in the company is probably too busy in handling affairs related to other business processes. This has probably resulted in lack of emphasis on the crucial aspect of planning various “sourcing events” with diligence. Alignment of sourcing strategies with other operations such as manufacturing, marketing and transportation is an important aspect, and it should form an intrinsic part of the overall planning process. Strategies followed for these individual processes are

undoubtedly inter-linked and therefore need to be coordinated by means of joint planning amongst team members. For instance, the need for real-time flow of the information regarding prediction of market demand fluctuation, both rear wards and laterally, has to be ensured through a systemic and responsive mechanism which encompasses all players in the sourcing process. This can only be achieved through well-planned and responsible actions at various levels of functionality.

Once identified as a major or “at par” contributor, lack of attention towards the sourcing process can be eradicated by the top hierarchy in the Company. Considering that a vast and intricate industry like automobile would require to depend upon a number of “supply networks” pertaining to sourcing of different products used in the manufacturing, it is but imperative to realize the significance of skill development and analytical ability to handle the sub-processes of strategic sourcing.

Non-alignment of performance to rewards was also identified as a restraining factor in the field of strategic sourcing. This trend evidently reflects the lack of understanding of deeper nuances of the sourcing process and the consequent inability to associate it with the driving force behind overall success of the chain.

Data sharing among sourcing partners constitutes a vital link which binds, if we may call it, the “strategic relationship” between sourcing partners. Real time sharing of data and information is today made feasible by internet and Web-based technologies. The relationship may at time get hampered by lack of trust, which in turn may result from failure of data sharing mechanisms or even an unintentional breach of data. Continued insistence on retaining legacy of patented software and thereby infusing incompatibilities in the process of data sharing may also be an impediment to a strategic source partnership. Identification and awareness of such barriers by all partners can go a long way in safeguarding against adverse impact of data flow inertia and security breaches.

5.7 Conclusions

Managing sourcing risk is an ongoing process - in effect, a moving target. Strategic sourcing executives cannot “set it and forget it” like they can with other repeatable and scalable processes. They need to recruit internal and external partners, identify and understand risks from their vantage points, prioritize them, delineate/ delegate responsibility and practice real-world scenarios. In effect, they need to have standardized processes in place for managing and or

avoiding supply network risks. Failing to do so can result in diminished enterprise-wide performance or worse. But effective standardization and mitigation can protect the organization's bottom line and help procurement deliver (or return) more value to the enterprise. After all, "an ounce of prevention beats a pound of cure".

Automated management of supplier information and supplier performance management tools can centralize and standardize supplier information, close process gaps from spend analysis to supplier performance analysis, and help strategic sourcing teams ensure that they are working with the best suppliers in the market. Yet, so few teams currently leverage these resources, leaving significant opportunity to enhance operations and performance. If the sourcing leaders plan to automate these processes, in the next two to three years, there is reason to be cautiously optimistic about the future of supplier management.

By observing the world economy, today it is becoming increasingly clear that traditional supply network management approaches must be enhanced in many ways to become capable to deal with the new uncertainties and issues which are arising from new market trends. A company that manages Strategic Sourcing risks effectively has the advantage over the competition. The benefits of managing risks include effective decision-making, better balance between opportunity and threat, fewer surprises, reducing costs and effective selection of suppliers.

Even the best-organized strategic sourcing teams cannot be expected to predict all future events and disruptions. However, proactive sourcing executives are trying to focus on optimizing decisions and processes across the entire supply network to gain clear benefits.

The study finds out the various SSRM enablers and barriers for the Indian automotive sector. The findings suggest that the barriers have a stronger impact on the sourcing than the enablers. The study has highlighted various factors which have led to this critical situation facing the industry. Managers have to immediately focus in improving the risk management (identification, monitoring and mitigation plans) processes, dissemination of information to partners, aligning the supply network and strategic sourcing. This is possible only through developing a trust relationship between the partners in the supply network and improving their business processes through investment in technology and strong strategic leadership at the top. In this study, the main processes of risk management in strategic sourcing have been presented. The issues that contribute to main risks have been analysed and conclusions about their treatment processes have been given.